UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,462	03/05/2004	Wen-Sheng Hou	SISP0007USA	2461

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EXAMINER
HUANG, DAVID S

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
06/15/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/708,462	HOU, WEN-SHENG
	Examiner	Art Unit	
	David Huang	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05 March 2004_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-11_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-11_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 March 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _5/27/2005_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Information Disclosure Statement

1.   The references listed in the Information Disclosure Statement filed on May 27, 2005 have

been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms.

Specification

2.   The disclosure is objected to because of the following informalities: The equation on

page 5, [0018] is not easily readable nor reproducible (particularly the exponents). Appropriate

correction is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   **Claims 1-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al.

(US Patent 6,266,361 hereinafter '361) in view of Huang et al. (US Patent 5,991,289 hereinafter

'289).

Regarding **claim 1**, patent '361 discloses a method of estimating carrier frequency offset

in a constant-period, preambled wireless communications system, the method comprising:

determining a main-cursor signal corresponding to a main-cursor path from a matched

code output (column 9, lines 55-57); and

estimating the carrier frequency offset according to a predefined formula utilizing the

phase angle difference of the matched filter output (column 8, lines 45-47, Figure 6).

Patent '361 fails to expressly disclose the step of multiplying the main-cursor signal by a delayed conjugated version of the main-cursor signal to obtain a first result.

Patent '289 discloses a method of for estimating fractional carrier frequency offset of an input signal including the steps of delaying the input signal by a predetermined duration, multiplying the input signal with a complex conjugate of the delayed input signal to produce an output signal that has at least one high-to-low transition such that phase values of a first portion of the symbol decrease substantially compared to a second portion of the symbol (column 3, lines 13-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide patent '361 with the teaching of '289 since patent '361 teaches using the phase difference information to estimate carrier frequency offsets (column 8, lines 45-47, Figure 6) and patent '289 teaches a method of how to obtain that phase difference information (column 3, lines 13-20). Furthermore, both references address the same issue, estimating and correcting for carrier frequency offsets in wireless systems.

Regarding **claim 2**, '361 discloses everything claimed as applied above (see *claim 1*), and further discloses wherein the main-cursor signal is determined using peak-detection (column 8, lines 36-42).

Regarding **claim 3**, '361 discloses everything claimed as applied above (see *claim 1*), and further discloses wherein the predefined formula includes multiplying a phase of the first result (phase angle difference, column 7, lines 25-32) by the sign of a real part of the first result (direction flag is determined based on comparing the maximum (amplitude) outputs of a matched filter applying a pilot spreading code to a received signal; the output with the largest amplitude is

compared with matched results immediately before and after to determine the phase offset

direction, column 5, lines 25-45, and column 6, 37 lines 37-52; in the correction of fractional part

of carrier frequency the direction flag is used to decide the calculation way of the phase angle

difference; direction flag of –1 is a phase shift between 0 and –360 degrees (negative), and a flag

of 1 is a phase shift between 0 and 360 degrees (positive)).

Regarding **claim 4**, '361 discloses everything claimed as applied above (see *claim 3*), and

further discloses wherein the main-cursor signal is a BPSK signal (column 8, lines 31-32).

Regarding **claim 5**, '361 discloses everything claimed as applied above (see *claim 1*), and

further discloses wherein the communications system is a DSSS wireless communications

system (column 2, lines 45-48).

5.   **Claims 6-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al.

(US Patent 6,266,361 hereinafter '361) in view of Huang et al. (US Patent 5,991,289 hereinafter

'289) and further in view of Powel, II et al. (US Patent 6,130,921) and Chung et al. (US Patent

6,005,889).

Regarding **claim 6**, patents '361 and '289 teach the functionality of the program code as

applied to the corresponding method *claim 1*, implemented as an integrated circuit to achieve a

small and compact design.

However, the combination of '361 and '289 fails to expressly disclose a transceiver for

wirelessly communicating with another communications device within the communications

system; and

control circuitry connected to the transceiver, the control circuitry comprising a CPU and

a memory, the memory comprising program code

Chung et al. discloses the front end of a mobile phone receiver for detecting a carrier

frequency offset in a received PN-modulated signal in a network using DSSS signals (column 3,

lines 32-35). The device for implementation of the method of detection and estimation of carrier

frequency offset can be implemented with hardware components which are already present

within the mobile phone's architecture, allowing implementation to be attained at minimal cost

(column 8, lines 6-10). Chung et al. also disclose operations of interest for frequency offset

detection and estimation occur within DSP 230 and searcher 217 which is controlled by DSP 230

(column 5, lines 39-44, Figure 2). DSP 230 also has a memory (column 7, line 7, Figure 2).

However, references '361, '289, and Chung et al. fail to expressly disclose the control

circuitry connected to the mobile phone comprises a CPU and a memory comprising program

code.

Powell, II et al. teaches automatic frequency correction circuit with a controller circuit

with DSP 815 comprising a CPU 818 and a ROM 816 that stores program instruction that control

the CPU 818 (column 7, lines 1-5, Figure 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide patent '361 with the teaching of '289 since patent '361 teaches

using the phase difference information to estimate carrier frequency offsets (column 8, lines 45-

47, Figure 6) and patent '289 teaches a method of how to obtain that phase difference

information (column 3, lines 13-20). Both references address the same issue, estimating and

correcting for carrier frequency offsets in wireless systems. It would have also been obvious to

one of ordinary skill in the art to modify the combination of '361 and '289 with the teaching of

Chung et al. since '361 implements the invention as an integrated circuit to achieve small and

compact design which complements Chung et al.'s implementation in mobile phones.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide the combination of '361, '289, and Chung et al. with the teaching

of Powell, II et al. since both Chung et al. and Powell, II et al. teach the use of a DSP with

memory to estimate and detect frequency offsets and would have logically commended itself to

the attention of one of ordinary skill in the art in considering this problem.

Regarding **claim 7**, in the combination applied to *claim 6* above, '361 further discloses

wherein the main-cursor signal is determined using peak-detection (column 8, lines 36-42).

Regarding **claim 8**, in the combination applied to *claim 6* above, '361 further discloses

wherein the predefined formula includes multiplying a phase of the first result (phase angle

difference, column 7, lines 25-32) by the sign of a real part of the first result (the direction flag

is determined based on comparing the maximum (amplitude) outputs of a matched filter applying

a pilot spreading code to a received signal; the output with the largest amplitude is compared

with matched results immediately before and after to determine the phase offset direction,

column 5, lines 25-45, and column 6, 37 lines 37-52; in the correction of fractional part of carrier

frequency the direction flag is used to decide the calculation way of the phase angle difference;

direction flag of –1 is a phase shift between 0 and –360 degrees (negative), and a flag of 1 is a

phase shift between 0 and 360 degrees (positive)).

Regarding **claim 9**, in the combination applied to *claim 6* above, '361 further discloses

wherein the main-cursor signal is a BPSK signal (column 8, lines 31-32).

Regarding claim 10, the combination applied to *claim 6* above fails to expressly disclose

the device further comprising a keyboard and LCD.

Powell, II et al. disclose display 824 and user controls 820.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide the combination of '361, '289, Chung et al., and Powell, II et al.

with an LCD display and keypad user controls since the choice of such elements are an

engineering expedient and provide a familiar user-friendly interface in a mobile phone.

Regarding **claim 11**, in the combination applied to *claim 6* above, '361 further discloses

wherein the communications system is a DSSS wireless communications system (column 2, lines

45-48).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to David Huang whose telephone number is (571) 270-1798. The

examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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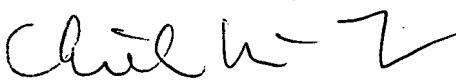
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SUPERVISORY PATENT EXAMINER